Cisco 3800 Series Integrated Services Routers

Cisco 3825 and Cisco 3845

Cisco Systems®, Inc. redefines branch office routing with a portfolio of Integrated Services Routers optimized for secure, wire-speed delivery of concurrent data, voice, video, and wireless services. Founded on 20 years of innovation, the Cisco® 3800 Series Integrated Services Routers provide customers with unparalleled network agility, performance, and intelligence. The Cisco 3800 Series transparently integrates advanced technologies, adaptive services, and secure enterprise communications into a single, resilient system. The Cisco 3800 Series routers ease deployment and management, lower network cost and complexity, and provide unmatched investment protection. The Cisco 3800 Series routers feature embedded security processing, generous performance and high memory capacity, and high-density interfaces that deliver the performance, availability, and reliability required for scaling mission-critical security, IP telephony, business video, network analysis, and Web applications in the most demanding enterprise environments. Built for performance, the Cisco 3800 Series routers deliver multiple concurrent services up to wire-speed T3/E3 rates.

Figure 1. Cisco 3825 and Cisco 3845 Integrated Services Router

Product Overview

The integrated services routing architecture of the Cisco 3800 Series is designed to embed and integrate security and voice processing with advanced wired and wireless services for rapid deployment of new applications, including application layer functions, intelligent network services, and converged communications. The Cisco 3800 Series supports the bandwidth requirements for multiple Fast Ethernet interfaces per slot, time-division multiplexing (TDM) interconnections, and fully integrated power distribution to modules supporting 802.3af Power over Ethernet (PoE), while still supporting the existing portfolio of modular interfaces. This ensures continuing investment protection to accommodate network expansion or changes in technology as new services and applications are deployed. By integrating the functions of multiple separate devices into a single compact unit, the Cisco 3800 Series dramatically reduces the cost and complexity of managing remote networks.

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The two models, the Cisco 3825 and the Cisco 3845, are available with three optional configurations for AC power, AC power with integrated inline power support, and DC power.

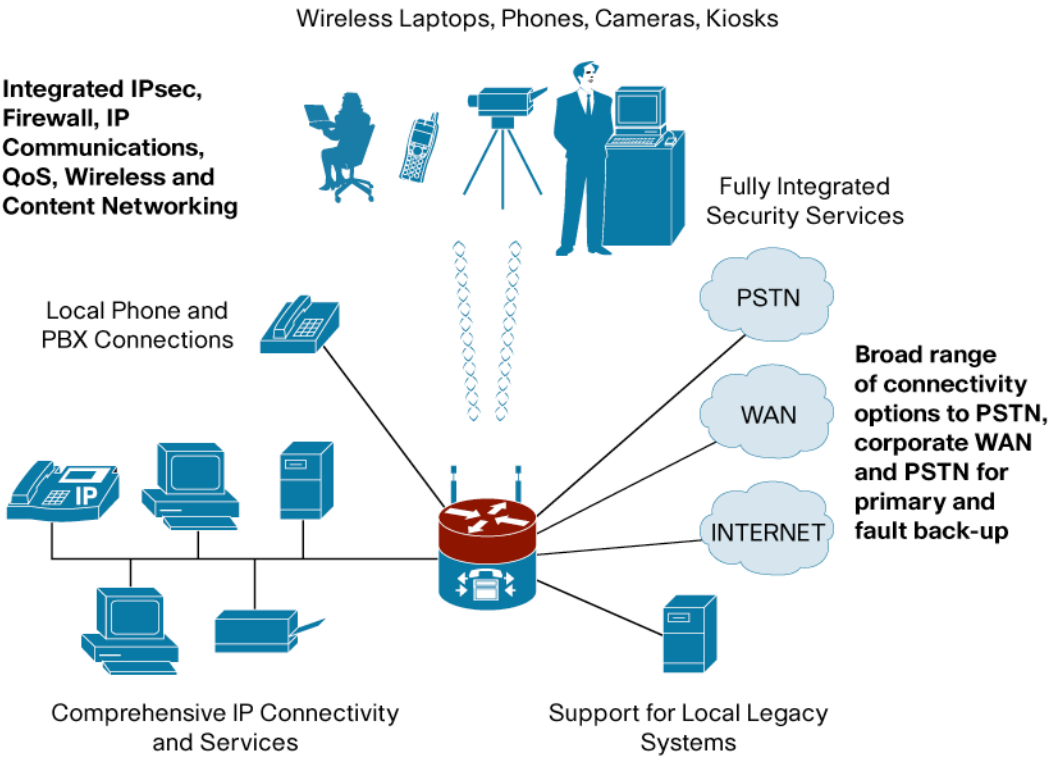
Secure Network Connectivity for Data, Voice, and Video

An important component of the Cisco Self-Defending Network, the Cisco 3800 Series features the industry's most comprehensive security services embedded and integrated within the router, providing customers with a single, resilient platform to rapidly deploy secure networks and applications.

Cisco Integrated Services Routers provide advanced security services and management capabilities such as built-in hardware encryption acceleration, IPSec, VPN (Advanced Encryption Standard [AES], Triple Digital Encryption Standard [3DES], DES and Multiprotocol Label Switching [MPLS]), stateful firewall protection, dynamic intrusion prevention (Intrusion Prevention System [IPS]), and URL filtering support. Cisco IOS security feature sets enable all of these rich security features, as well as applications such as Network Admission Control (NAC), Dynamic Multipoint VPN (DMVPN), and Voice and Video Enabled VPN (V3PN).

For ease of management and configuration, the 3800 Series also features the intuitive, Web-based Cisco Router and Security Device Manager (SDM). For secure services management, every Cisco integrated services router supports Secure Shell Protocol Version 2 (SSHv2) and Simple Network Management Protocol Version 3 (SNMPv3) protocols to encrypt the management session.

Figure 2. Secure Network Connectivity with Converged IP Communications


Wireless Laptops, Phones, Cameras, Kiosks
Integrated IPsec, Firewall, IP Communications, QoS, Wireless and Content Networking
Fully Integrated Security Services
Local Phone and PBX Connections
PSTN
WAN
INTERNET
Broad range of connectivity options to PSTN, corporate WAN and PSTN for primary and fault back-up
IP
Comprehensive IP Connectivity and Services
Support for Local Legacy Systems

Converged IP Communications

As shown in Figure 2, the Cisco 3800 Series meets the IP Communications needs of midsize to large enterprise branch offices, while delivering industry-leading security within a single routing

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platform. By embedding voice services inside the router, Cisco provides customers with maximum deployment flexibility, plus higher densities for stations, trunks, and conferencing.

The Cisco 3800 Series routers offer the award-winning Cisco IP Telephony solution for wired and cordless WLAN phones, with Cisco CallManager Express (CME), as an optional feature set embedded within Cisco IOS® Software. This solution is ideal for customers who want to decrease costs and complexity by converging voice and data networks. By adding a Cisco Unity™ Express advanced integration module (AIM) or network module to this solution, small offices and branch offices can take advantage of a complete, all-in-one data, voice-processing, voice-mail, and auto-attendant system. For larger, centralized IP Communications deployments, customers can deploy Survivable Remote Site Telephony (SRST) in their Cisco 3800 Series routers with a central Cisco CallManager for highly scalable, highly available enterprise IP Communications. SRST is an important component of the Cisco end-to-end IP telephony offering, providing feature-rich call-processing redundancy, while taking advantage of the existing infrastructure at the branch office.

Cisco 3800 Series routers also feature the widest range of voice-gateway interfaces, scaling to meet the needs of the smallest to largest branch requirements for voice termination densities using a combination of network modules, extension voice modules (EVMs), voice interface cards (VICs), voice/WAN interface cards (VWICs), and onboard packet voice DSP modules (PVDMs). Customers have unprecedented scalability for supporting up to 24 T1/E1 trunks and 88 foreign-exchange-station (FXS) ports for analog phones, fax machines, key systems, and conference stations.

Wireless Services

The Cisco 3800 Series can provide a complete wireless solution for branch offices, small/medium sized businesses, and Wi-Fi hotspots. Wireless services enable greater mobility for employees, partners, and customers, resulting in increased productivity. The Cisco 3800 Series supports an integrated access point for wireless LAN connectivity, Wi-Fi Hotspot services for public access, wireless infrastructure services for cordless WLAN telephony and for larger sites, and land mobile radio over IP for radio users.

Integrated Services

Figure 2 also highlights the fact that with the unique integrated services architecture of the Cisco 3800 Series, customers can securely deploy IP Communications with traditional IP routing and still leave the network-module slots available for additional advanced services. With the optional integration of a wide array of services modules, the Cisco 3800 offers the ability to easily integrate the functions of standalone network appliances and components into the Cisco 3800 Series chassis itself. Many of these network modules, such as the Cisco Network Analysis, Cisco Intrusion Detection System, and Cisco Content Engine network modules, have embedded processors and hard drives that allow them to run largely independently of the router, while allowing their management from a single management interface. This flexibility greatly expands the potential applications of the Cisco 3800 Series beyond traditional routing while still maintain the benefits of integration: ease of management, lower solution costs, and increased speed of deployment.

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Primary Features and Benefits

The global economy is increasingly reliant on networked enterprise applications and the Internet as indispensable tools for tackling urgent business challenges. Successful companies require secure, high-performance networks that can quickly adapt to support volatile business conditions, while helping boost competitive advantage and increase network efficiencies. They must invest in network infrastructure that uses essential technologies and easily enables improved models of communication without disruption to core business functions. The Cisco 3800 Series helps companies operate securely in a networked economy and easily implement network services that will improve their business without impacting existing operations or degrading network performance. Table 1 gives further details regarding the features and benefits of the Cisco 3800 Series.

Table 1. Features and Benefits of Cisco 3800 Series

Feature	Benefit
Architecture Optimized for Services Growth	• This high-performance architecture is optimized for concurrent service deployment. • This architecture offers increased default and maximum memory for future services growth. • PVDM slots accommodate digital-signal-processor (DSP) modules for packet voice processing. • Enhanced chassis interfaces help enable unprecedented performance and service densities. • Advanced service interfaces integrate applications directly into the router, without the need for separate appliances: ◦ Network analysis module (NAM)—Integrated traffic monitoring helps enable application level visibility into network traffic for remote troubleshooting and traffic analysis. ◦ Cisco Intrusion Detection System (IDS) Module—The Cisco IDS Module provides the ability to inspect all traffic traversing router interfaces; to identify unauthorized or malicious activity such as hacker attacks, worms, or denial-of-service attacks; and to terminate illegitimate traffic to suppress or contain threats. ◦ The Cisco Content Engine Network Module delivers application layer services including Web application acceleration, business video streaming, software distribution, and URL filtering.
Embedded Security Processing and Best-in-Class Security Feature Support	• Integrated hardware for offload of encryption services processing supports IPSec 3DES, and AES 128, AES 192, and AES 256 encryption modes without the need for separate modules. • Cisco IOS Software features offer support for identifying, preventing, and adapting to security threats and maintaining a self-defending network, including Cisco Security Device Manager, Network Admission Control, Dynamic Multipoint VPN, dynamic IPS, Cisco IOS Software Firewall, and URL filtering capabilities.
Ideal Platform for Integrated IP Telephony	• Onboard DSPs-Integrated PVDMs support analog voice, digital voice, conferencing, transcoding, and secure Real-Time Transport Protocol (SRTP) media while enabling network-module or AIM slots for switching, concurrent applications, content, and voice mail. The DSPs help enable packet voice technologies, including VoIP protocols such as H.323, Media Gateway Control Protocol (MGCP), and Session Initiation Protocol (SIP); voice over Frame Relay; and voice over ATM (including ATM Adaption Layer 5 (AAL5) and AAL2 adaptation layers). • The platform offers scalability for centralized and distributed call processing: ◦ SRST with centralized Cisco CallManager-Up to 720 phones ◦ Cisco Unity Express (CUE) voice mail-Up to 120 mail boxes ◦ Cisco CallManager Express IP phones-Up to 240 IP phones ◦ Small to large branch connectivity-Up to 24 T1/E1 trunks ◦ Analog phones, fax machines, key systems, and conference stations-Up to 88 FXS ports ◦ Local or long-distance calling with the EVM module-Up to 48 foreign exchange office (FXO) or 32 Basic Rate Interface (BRI) ports • Cisco IOS Software delivers customized features and applications, such as Tool Command Language (TCL) and Voice Extensible Markup Language (VXML) support • Secure calls are possible with Cisco CallManager and Cisco IP phones using the Cisco 3800: ◦ Offers standards-based, secure media and signaling authentication and encryption from IP phone to IP phone, IP phone to analog phone or public switched telephone network (PSTN) gateway using IPSec, transport layer security (TLS), and Secure Real Time Protocol (SRTP) ◦ Maintains channel capacity for medium- and high-complexity codecs

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Feature	Benefit
Integrated Wireless Support	• WLAN connectivity: ◦ The 802.11b/g or 802.11a/b/g HWIC access point interface card can be used to provide integrated WLAN connectivity to mobile clients at sites requiring a single access point, resulting in mobility and enhanced productivity for users. ◦ Dual RP-TNC connectors enable diversity and allow for optimum coverage through the use of external antennas. • Wireless Infrastructure Services: ◦ Telephony support for wired and WLAN IP phones is delivered by Cisco CallManager Express (CCME) or by Survivable Remote Site Telephony (SRST) with Cisco CallManager. Cordless WLAN IP phones allow users to be mobile and more productive. ◦ Integrated switch modules with Power over Ethernet (POE) enable support for Cisco Aironet access points (for larger sites) as well as wired IP phones. ◦ Mobility for clients from WLAN to cellular networks is enabled by Mobile IP home agent support. ◦ IEEE 802.1x local authentication using LEAP provides enhanced reliability through survivable authentication for WLAN clients during WAN failures. ◦ Customizable guest access is enabled with the service selection gateway features, along with the Subscriber Edge Services Manager. • Wireless LAN Controller: ◦ The Cisco WLAN Controller (WLC) module (WLCM) enables Cisco 3800 series routers to manage up to six wireless LAN (WLAN) access points (APs) and simplifies WLAN deployment and management. • Land Mobile Radio over IP: ◦ LMR over IP support allows radio users (e.g., security personnel, maintenance personnel, police officers, etc.) to communicate via IP with phone and PC users, delivering improved communications and productivity. • Wi-Fi Hotspot Services: ◦ The access zone router and service selection gateway services features can be used to deploy secure public WLAN access services with an integrated HWIC-AP for small sites or with Cisco Aironet access points for larger sites. Wi-Fi hotspot services can be offered for additional revenue for public locations (e.g., restaurants, hotels, airports, etc.) or a value-added service for customer satisfaction.
Investment Protection	Field-upgradable, modular components are supported on the Cisco 3800 Series, allowing customers to easily change network interfaces without upgrading their entire branch-office network. The Cisco 3800 Series takes advantage of the existing portfolio of WICs, VICs, network modules and AIMs to reduce sparing, training, configuration, installation, and maintenance costs.
Availability	The Cisco 3800 Series minimizes downtime with availability features, including optional redundant power, Error Checking and Correction (ECC) memory for improved fault isolation and correction, USB Flash memory for ease of image recovery, advanced temperature monitoring and variable-speed cooling fans, Cisco IOS Software Warm Reboot for improved bootup times, network-module online insertion and removal, and field-replaceable components such as fan tray, motherboard, and power supplies (Cisco 3845 only).

Product Architecture

Table 2. Features of Cisco 3825 and Cisco 3845

Cisco 3800 Series Features	Cisco 3825	Cisco 3845
Network-Module Slots—These slots can accommodate a standard network-module, enhanced-network-module (NME), enhanced-extended-network-module (NME-X), and high-density extension module (EVM-HD). The NME-X, when available, will have a wider form factor than the NME. Two side-by-side NME slots can be combined to accommodate one double-wide network module (NMD) or when available, a double-wide enhanced extended network module (NME-XD).	• NM • NME • NME-X • NMD • NME-XD • EVM-HD	• NM • NME • NME-X • NMD • NME-XD • EVM-HD
Maximum Number of Network Modules, NMEs, and NME-Xs Supported	2	4
Maximum Number of NMD/NME-XDs supported	1	2
Maximum Number of EVM-HDs supported	1	2
Number of High-Speed WIC (HWIC) Slots—These HWIC slots also support VICs, VWICs, and WICs.	4	4
Number of Fixed LAN Ports (fixed RJ-45 port for 10/100/1000 connectivity)	2 Gigabit Ethernet (10/100/1000)	2 Gigabit Ethernet (10/100/1000)

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Cisco 3800 Series Features	Cisco 3825	Cisco 3845
Number of Fixed Small Form-Factor Pluggable (SFP) Ports (for SFP Gigabit Ethernet connectivity)	1	1
Number of AIM Slots (for optional AIMs for offloading compute-intensive features)	2	2
Number of PVDM Slots (for optional PVDM2s)	4	4
Number of USB 1.1 Ports (for future use with USB Flash memory, security tokens for secure Cisco IOS Software configuration distribution, and off-platform storage of VPN credentials)	2	2
Embedded VPN (hardware-based VPN encryption acceleration)	Yes	Yes
Number of Console Ports (up to 115.2 kbps)	1	1
Number of Auxiliary Ports (up to 115.2 kbps)	1	1
Memory—External Compact Flash and internal DDR (Double Data Rate) SDRAM with ECC	• Default—64 MB Compact Flash; 256 MB DDR SDRAM • Maximum—512 MB Compact Flash; 1 GB DDR SDRAM	• Default—64 MB Compact Flash; 256 MB DDR SDRAM • Maximum—512 MB Compact Flash; 1 GB DDR SDRAM

Summary

The Cisco 3800 Series introduces best-in-class routing, security, and voice technologies embedded into the router fabric, making it possible for enterprises to securely deliver concurrent, mission-critical services and applications at wire-speed performance. The Cisco 3800 Series extends network capabilities and productivity from the corporate headquarters to the branch offices for increased operational efficiencies and end-user productivity. The advanced adaptability and modularity of the Cisco 3800 Series routers provides customers with the widest variety of network interfaces and services, including: VPN IPSec, intrusion detection, IP Communications, wireless LAN services, integrated switching, business video, URL filtering, application optimization, DSL, ATM access, and serial device aggregation. By consolidating the functions of multiple, separate services into a single, resilient platform that can be easily managed and deployed, Cisco is providing customers with the industry's leading routing platforms for growth and investment protection.

Product Specifications

Table 3 gives the specifications of the Cisco 3825 and the Cisco 3845.

Table 3. Specifications of Cisco 3825 and Cisco 3845

Cisco 3800 Series Features	Cisco 3825	Cisco 3845
Physical Specifications		
Dimensions (H x W x D)	• 3.5 x 17.4 x 14.8 in. • 2 Rack Unit (RU)	• 5.25 x 17.25 x 16 in. • 3 Rack Unit (RU)
Weight (minimum)	23 lb	45 lb
Rack-Mounting	Yes, 19” and 23” options	Yes, 19” and 23” options
Wall-Mounting	No	No
Power Specifications		
AC-Input Voltage	100-240 VAC, auto-ranging	100-240 VAC, auto-ranging
AC-Input Frequency	47-63 Hz	47-63 Hz

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Cisco 3800 Series Features	Cisco 3825	Cisco 3845
AC-Input Current	• 3A (110V) • 2A (230V) • Startup current 50A maximum (one cycle)	• 4A (110V) • 2A (230V) • Startup current 50A maximum (one cycle)
AC-IP-Input current	• 8A (110V) • 4A (230V) • Startup current 50A maximum (one cycle)	• 8A (110V) • 4A (230V) • Startup current 50A maximum (one cycle)
DC-Input Voltage	24-60 VDC, auto-ranging positive or negative	24-60 VDC, auto-ranging positive or negative
DC-Input Current	• 12A (24V) • 5A (60V) • Startup current 50A<10 ms	• 18A (24V) • 7A (60V) • Startup current 50A<10 ms
Output	• AC or DC power supply: ◦ 210W for system • AC-IP power supply: ◦ 210W for system ◦ 360W for IP phones (-48V)	• AC or DC power supply: ◦ 300W for system • AC-IP power supply: ◦ 300W for system ◦ 360W for IP Phones (-48V)
Redundant Power Supply (RPS)	External only (Cisco RPS 675)	Internal AC, AC-IP, or DC RPS
Recommended RPS Unit	Cisco RPS 675	–
Power Dissipations		
AC Without IP Phone Support	300W (1025 BTU/hr)	435W (1485 BTU/hr)
AC With IP Phone Support—System Only	370W (1262 BTU/hr)	555W (1890 BTU/hr)
AC With IP Phone Support—IP Phones	360W (1128 BTU/hr)	360W (1128 BTU/hr)
DC	325W (1100 BTU/hr)	460W (1570 BTU/hr)
Environmental Specifications		
Operating Temperature	32°to 104℉ (0°to 40℃)	32° to 104℉ (0 to 40℃)
Non-Operating Temperature	-40°to 185℉ (-40°to 85 ℃)	-40°to 185℉ (-40°to 85℃)
Relative Humidity Non-Condensing	5-95% non-condensing	5-95% non-condensing
Maximum Operating Temperature at Altitude	40℃ @ sea level 40℃ @ 6,000 ft (1800 m) 30℃ @ 13,000 ft (4000 m) 27.2℃ @ 15,000 ft (4600 m) Note: Derate 1.4℃ per 1,000 ft above 6,000 ft	40℃ @ sea level 40℃ @ 6,000 ft (1800 m) 30℃ @ 13,000 ft (4000 m) 27.2℃ @ 15,000 ft (4600 m) Note: Derate 1.4℃ per 1,000 ft above 6,000 ft
Noise Level (minimum)	50 dBa typical, 53 dBa maximum	56 dBa typical, 58 dBa maximum
Regulatory Compliance		
Safety	• UL 60950 • CAN/CSA C22.2 No. 60950 • EN 60950 • AS/NZS 60950	• UL 60950 • CAN/CSA C22.2 No. 60950 • EN 60950 • AS/NZS 60950
EMC	• 47 CFR, Part 15 • ICES-003 Class A • EN55022 Class A • CISPR22 Class A • AS/NZS 3548 Class A • VCCI V-3 • EN 300386 • EN 61000	• 47 CFR, Part 15 • ICES-003 Class A • EN55022 Class A • CISPR22 Class A • AS/NZS 3548 Class A • VCCI V-3 • EN 300386 • EN 61000

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Cisco 3800 Series Features	Cisco 3825	Cisco 3845
TELCOM	• 47 CFR, Part 68 • TIA/EIA/IS-968 • CS-03 • RTTE Directive	• 47 CFR, Part 68 • TIA/EIA/IS-968 • CS-03 • RTTE Directive

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Supported Modules

Table 4 gives the modules supported by the Cisco 3800 Series.

Table 4. Modules Supported by Cisco 3800 Series

Feature	Benefit
Small-Form Pluggable (SFP) Optics for Gigabit Ethernet Port	
GLC-LH-SM	Gigabit Ethernet SFP, LC connector LX/LH transceiver
GLC-SX-MM	Gigabit Ethernet SFP, LC connector SX transceiver
GLC-ZX-SM	Gigabit Ethernet 1000BASE-ZX SFP
Ethernet Switching Network Modules	
NM-16ESW	16-port 10/100 Cisco EtherSwitch network module
NM-16ESW-1GIG	16-port 10/100 Cisco EtherSwitch network module with 1 Gigabit Ethernet (1000BASE-T) port
NM-16ESW-PWR	16-port 10/100 Cisco EtherSwitch network module with inline power support
NM-16ESW-PWR-1GIG	16-port 10/100 Cisco EtherSwitch network module with inline power and 1 Gigabit Ethernet port
NME-16ES-1G-P	One 16-port 10/100 Cisco EtherSwitch service module with 802.3af, 1 10/100/1000 port, and IP Base
NME-X-23ES-1G-P	One 23-port 10/100 Cisco EtherSwitch service module with 802.3af, 1 10/100/1000 port w/ 802.3af, and IP Base
NME-XD-24ES-2S-P	One 24-port 10/100 Cisco EtherSwitch service module with 802.3af, 1 SFP, Cisco StackWise connectors, and IP Base
NME-XD-48ES-2S-P	One 48-port 10/100 Cisco EtherSwitch service module with 802.3af, 2 SFPs, and IP Base
NME-16ES-1G	One 16-port 10/100 Cisco EtherSwitch service module, 1 10/100/1000 port and IP Base
NM-X-23ES-1G	One 23-port 10/100 Cisco EtherSwitch service module, 1 10/100/1000 port and IP Base
LAN Network Modules	
NM-1FE-FX-V2	1-port Fast Ethernet, revision 2 (100BASE-FX interface)
NM-1GE	1-port Cisco Gigabit Ethernet network module
NM-2W	2-WIC-slot network module (no LAN)
NM-1FE1R2W	1-port 10/100 Ethernet 1-port 4/16 Token Ring 2-WIC-slot network module
NM-1FE2W-V2	1-port 10/100 Ethernet 2-WIC-slot network module, version 2
NM-2FE2W-V2	2-port 10/100 Ethernet 2-WIC-slot network module, version 2
Serial Connectivity Network Modules	
NM-1T3/E3	1-port clear-channel T3/E3 network module
NM-1HSSI	1-port High-Speed Serial Interface (HSSI) network module
NM-4T	4-port serial network module
NM-4A/S	4-port asynchronous/synchronous serial network module
NM-8A/S	8-port asynchronous/synchronous serial network module
NM-16A/S	16-port asynchronous/synchronous serial network nodule
NM-16A	16-port asynchronous serial network module
NM-32A	32-port asynchronous serial network module
Channelized T1/E1 and ISDN Network Modules	
NM-1CE1T1-PRI	1-port Channelized E1/T1/ISDN-PRI network module
NM-2CE1T1-PRI	2-port Channelized E1/T1/ISDN-PRI network module
NM-4B-S/T	4-port ISDN BRI network module (S/T interface)
NM-4B-U	4-port ISDN BRI network module with integrated Network Termination 1 (NT1) (U interface)
NM-8B-S/T	8-port ISDN BRI network module (S/T interface)
NM-8B-U	8-port ISDN BRI network module with integrated NT1 (U interface)

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Feature	Benefit	
ATM Network Modules		
NM-1A-OC3-POM	1-port ATM OC-3 module with single pluggable optical module (Small Form Pluggable) slot. Requires one of the following SFPs to provide the optical interface.	
	SFP-OC3-MM	OC3/STM1 SFP, Multi-mode fiber
	SFP-OC3-IR1	OC3/STM1 SFP, Single-mode fiber, Intermediate Reach
	SFP-OC3-LR1	OC3/STM1 SFP, Single-mode fiber, Long Reach (40km)
NM-1A-T3	1-port DS-3 ATM network module	
NM-1A-E3	1-port E3 ATM network module	
Digital Dialup and Remote-Access Network Modules		
NM-6DM	6-digital-modem network module	
NM-12DM	12-digital-modem network module	
NM-18DM	18-digital-modem network module	
NM-24DM	24-digital-modem network module	
NM-30DM	30-digital-modem network module	
Analog Dialup and Remote-Access Network Modules		
NM-8AM-V2	8-port analog modem network module with v.92	
NM-16AM-V2	16-port analog modem network module with v.92	
Analog and ISDN Basic Rate Voice Network Modules and Accessories		
NM-HD-1V	1-slot IP communications voice/fax network module	
NM-HD-2V	2-slot IP communications voice/fax network module	
NM-HD-2VE	2-slot IP communications enhanced voice/fax network module	
NM-HDA-4FXS	High-density analog voice/fax network module with 4-port FXS	
EM-HDA-8FXS	8-port FXS voice/fax expansion module	
EM-HDA-4FXO	4-port FXO voice/fax expansion module	
EVM-HD-8FXS/DID	High-density analog (FXS/FXO/DID) and digital (BRI S/T) voice network module	
EM-HDA-3FXS/4FXO	7-port voice/fax expansion module-3FXS/4FXO	
EM-HDA-6FXO	6-port voice/fax expansion module-FXO	
EM-4BRI-NT/TE	4-port voice/fax expansion module-BRI	
High-Density Voice Network Modules and Accessories		
NM-HDV2	IP communications high-density voice/fax network module	
NM-HDV2-1T1/E1	1-port T1/E1 IP communications high-density voice/fax network module	
NM-HDV2-2T1/E1	2-port T1/E1 IP communications high-density voice/fax network module	
Application Network Modules		
NME-WAE-302-K9	Cisco Wide Area Application Services (WAAS) Network Module with 80 GB hard disk and 512 MB memory	
NME-WAE-502-K9	Cisco Wide Area Application Services (WAAS) Network Module with 120 GB hard disk and 1 GB memory	
NM-CE-BP-40G-K9	Cisco Content Engine network module, basic performance, 40-GB IDE hard disk	
NM-CE-BP-80G-K9	Cisco Content Engine network module, basic performance, 80-GB IDE hard disk	
NM-CIDS-K9	Cisco Intrusion Detection System network module	
NM-CUE	Cisco Unity™ Express voice mail network module	
NM-CUE-EC	Cisco Unity™ Express voice mail network module with enhanced capacity	
NM-NAM	Cisco 2600/3660/3700 series network analysis module	
NM-AIR-WLC6-K9	Cisco wireless LAN controller network module	
Circuit Emulation over IP (CEoIP) Network Modules		
NM-CEM-4SER	4 Port Serial Circuit Emulation over IP network module	
NM-CEM-T1E1	4 Port T1/E1 Circuit Emulation over IP network module	

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Feature	Benefit
Satellite Network Modules	
NM-1VSAT-GILAT	2-way satellite WAN connectivity module
Wireless HWICs	
HWIC-AP-G-A HWIC-AP-G-E HWIC-AP-G-J	802.11b/g HWIC access point interface card (A—Americas; E—Europe; J—Japan)
HWIC-AP-AG-A HWIC-AP-AG-E HWIC-AP-AG-J	802.11a/b/g HWIC access point interface card (A—Americas; E—Europe; J—Japan)
Serial WAN Interface Cards (WIC) and High-Speed WAN Interfaced Cards (HWIC)	
HWIC-4T	4-Port Serial HWIC
HWIC-4A/S	4-Port Async/Sync Serial HWIC
HWIC-8A/S-232	8-Port Async/Sync Serial HWIC, EIA-232
HWIC-8A	8-Port Async HWIC
HWIC-16A	16-Port Async HWIC
WIC-1T	1-port high-speed serial WIC
WIC-2T	2-port high-speed serial WIC
WIC-2A/S	2-port asynchronous/synchronous serial WIC
Channel Service Unit/Data Service Unit (CSU/DSU) WAN Interface Cards	
WIC-1DSU-T1-V2	1-port T1/Fractional-T1 DSU/CSU WIC
WIC-1DSU-56K4	1-port 4-wire 56-/64-kbps CSU/DSU WIC
ISDN BRI WAN Interface Cards	
WIC-1B-U-V2	1-port ISDN BRI with integrated NT1 (U interface)
WIC-1B-S/T-V3	1-port ISDN BRI Wan Interface card for Dial and Lease Line
DSL WAN Interface Cards and High-Speed WAN Interfaced Cards (HWIC)	
HWIC-1ADSL	1-port ADSL over POTS HWIC
HWIC-1ADSLI	1-port ADSL over ISDN HWIC
HWIC-1ADSL-B/ST	1-port ADSL over POTS and 1-port ISDN BRI S/T HWIC
HWIC-1ADSLI-B/ST	1-port ADSL over ISDN and 1-port ISDN BRI S/T HWIC
HWIC-2SHDSL	2-port G.SHDSL HWIC with 2-wire and 4-wire support
HWIC-4SHDSL	4-port G.SHDSL HWIC with 2-wire, 4-wire, and 8-wire support
WIC-1ADSL	1-port asymmetric DSL (ADSL) over basic telephone service WIC
WIC-1ADSL-DG	1-port ADSL over basic telephone service with dying-gasp WIC
WIC-1ADSL-I-DG	1-port ADSL over ISDN with dying-gasp WIC
WIC-1SHDSL-V3	1-port G.shdsl WIC (two or four wire)
Cable (DOCSIS-based) HWICs	
HWIC-CABLE-D-2	1-port DOCSIS 2.0 qualified cable HWIC
HWIC-CABLE-E/J-2	1-port Euro/J-DOCSIS 2.0 qualified cable HWIC
Analog Modem WAN Interface Cards	
WIC-1AM-V2	1-port analog modem WIC
WIC-2AM-V2	2-port analog modem WIC
T1, E1, and G.703 Multiflex Trunk Voice and WAN Interface Cards	
VWIC2-1MFT-T1/E1	1-Port T1/E1 Voice / WAN with drop and insert
VWIC2-2MFT-T1/E1	2-Port T1/E1 Voice / WAN with drop and insert
VWIC2-1MFT-G703	1-Port T1/E1 Voice / WAN with drop and insert and unstructured E1 (G703)
VWIC2-2MFT-G703	2-Port T1/E1 Voice / WAN with drop and insert and unstructured E1 (G703)

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Feature	Benefit
VWIC-1MFT-T1	1-port RJ-48 multiflex trunk—T1
VWIC-2MFT-T1	2-port RJ-48 multiflex trunk—T1
VWIC-2MFT-T1-DI	2-port RJ-48 multiflex trunk—T1 with drop and insert
VWIC-1MFT-E1	1-port RJ-48 multiflex trunk—E1
VWIC-1MFT-G703	1-port RJ-48 multiflex trunk—G.703
VWIC-2MFT-E1	2-port RJ-48 multiflex trunk—E1
VWIC-2MFT-E1-DI	2-port RJ-48 multiflex trunk—E1 with drop and insert
VWIC-2MFT-G703	2-port RJ-48 multiflex trunk—G.703
Voice Interface Cards	
VIC-2DID	2-port DID voice and fax interface card
VIC-4FXS/DID	4-port FXS or DID VIC
VIC2-2FXS	2-port VIC—FXS
VIC2-2FXO	2-port VIC—FXO (universal)
VIC2-4FXO	4-port VIC—FXO (universal)
VIC2-2E/M	2-port VIC—ear and mouth (E&M)
VIC2-2BRI-NT/TE	2-port VIC—BRI (NT and TE)
Ethernet Switching High-Speed WAN Interface Cards	
HWIC-4ESW	4-port 10/100 Ethernet switch interface card
HWIC-4ESW-POE	4-port Ethernet switch HWIC with PoE
HWIC-D-9ESW	9-port 10/100 Ethernet switch interface card
HWIC-D-9ESW -POE	9-port Ethernet switch HWIC with PoE
Ethernet High-Speed WAN Interface Cards	
HWIC-1FE	1-port Fast Ethernet HWIC
HWIC-2FE	2-port Fast Ethernet HWIC
HWIC-1GE-SFP	Cisco Gigabit Ethernet High-Speed Interface Card
Advanced Integration Modules	
AIM-ATM	High-performance ATM segmentation and reassembly (SAR) advanced integration module
AIM-ATM-1E1	High Performance ATM AIM/E1 Bundle, AIM-ATM with VWIC-1MFT-E1
AIM-ATM-1T1	High Performance ATM AIM/T1 Bundle, AIM-ATM with VWIC-1MFT-T1
AIM-ATM-1T1/E1	T1/E1 ATM bundle includes 1 VWIC2-1MFT-T1/E1 and 1 AIM-ATM
AIM-ATM-4T1/E1	T1/E1 ATM bundle includes 2 VWIC2-2MFT-T1/E1s and 1 AIM-ATM
AIM-ATM-4T1	4 port ATM IMA bundle
AIM-ATM-4E1	4 port ATM IMA bundle
AIM-COMPR4	Data compression advanced integration module
AIM-CUE	Cisco Unity Express voice mail advanced integration module
AIM-VPN/SSL-3	DES/3DES/AES/SSL VPN Encryption/Compression Advanced Integration Module (AIM) with IP version 6 encryption . Supported on 3825 and 3845
AIM-VPN/EPII-PLUS	Enhanced-performance DES/3DES/AES and compression VPN encryption advanced integration module
AIM-VPN/HPII-PLUS	High-performance DES/3DES/AES and compression VPN encryption advanced integration module
Packet Voice Data Modules	
PVDM2-8	8-channel fax and voice DSP module
PVDM2-16	16-channel fax and voice DSP module
PVDM2-32	32-channel fax and voice DSP module
PVDM2-48	48-channel fax and voice DSP module

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Feature	Benefit
PVDM2-64	64-channel fax and voice DSP module
Digital Modem Packet Voice/Data Modules	
PVDM2-12DM	12 Port Digital Modem Module
PVDM2-24DM	24 Port Digital Modem Module
PVDM2-36DM	36 Port Digital Modem Module
USB Flash Storage	
MEMUSB-64FT	64MB USB Flash
MEMUSB-128FT	128MB USB Flash
MEMUSB-256FT	256MB USB Flash
Compact Flash	
MEM3800-64CF	64MB Compact Flash
MEM3800-128CF	128MB Compact Flash
MEM3800-256CF	256MB Compact Flash
MEM3800-512CF	512MB Compact Flash

Ordering Information

To place an order, visit the Cisco Ordering Home Page. Table 5 gives further ordering information for the Cisco 3800 Series.

Table 5. Ordering Information for Cisco 3800 Series

Cisco 3800 Series Features	Cisco 3845
CISCO3825	Cisco 3825 integrated services router with two Gigabit Ethernet fixed LAN ports, one Small Form-Factor Pluggable (SFP) slot, two enhanced network modules (NMEs), four high-speed WAN interface cards (HWICs), two Advanced Integration Module (AIM) slots, four PVDM slots, Cisco IP Base software, and AC power
CISCO3825-AC-IP	Cisco 3825 integrated services router with two Gigabit Ethernet fixed LAN ports, one SFP slot, two NMEs, four HWICs, two AIM slots, four PVDM slots, Cisco IP Base software, and Inline Power
CISCO3825-DC	Cisco 3825 integrated services router with two Gigabit Ethernet fixed LAN ports, one SFP slot, two NMEs, four HWICs, two AIM slots, four PVDM slots, Cisco IP Base software, and DC power
CISCO3845	Cisco 3845 integrated services router with two Gigabit Ethernet fixed LAN ports, one SFP slot, four NMEs, four HWICs, two AIM slots, 4 PVDM slots Cisco IP Base software, and AC power
CISCO3845-AC-IP	Cisco 3845 integrated services router with two Gigabit Ethernet fixed LAN ports, one SFP slot, four NMEs, four HWICs, two AIM slots, four PVDM slots, Cisco IP Base software, and Inline Power
CISCO3845-DC	Cisco 3845 integrated services router with two Gigabit Ethernet fixed LAN ports, one SFP slot, four NMEs, four HWICs, two AIM slots, four PVDM slots, Cisco IP Base software, and DC power
Voice Bundles	
CISCO3825-V/K9	3825 Voice Bundle, PVDM2-64, SP Serv,64 MB Flash, 256 MB DRAM
CISCO3825-SRST/K9	3825 Voice Bundle with PVDM2-64, FL-SRST-168, SP Serv, 64 MB Flash, 256 MB DRAM
CISCO3825-CCME/K9	3825 Voice Bundle with PVDM2-64, FL-CCME-168, SP Serv, 64 MB Flash, 256 MB DRAM
CISCO3845-V/K9	3845 Voice Bundle, PVDM2-64, SP Serv, 64 MB Flash, 256 MB DRAM
CISCO3845-SRST/K9	3845 Voice Bundle with PVDM2-64, FL-SRST-240, SP Serv, 64 MB Flash, 256 MB DRAM
CISCO3845-CCME/K9	3845 Voice Bundle with PVDM2-64, FL-CCME-240, SP Serv, 64 MB Flash, 256 MB DRAM
Secure Voice Bundles	

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Cisco 3800 Series Features	Cisco 3845
CISCO3825-V3PN/K9	3825 V3PN bundle with AIMVPN, PVDM2-64, CCME-168, AdvIPSvc, 64 MB Flash, 256 MB DRAM
CISCO3845-V3PN/K9	3845 V3PN bundle, AIM-VPN, PVDM2-64, CCME-240, AdvIPServ, 64 MB Flash, 256 MB DRAM
C3825-VSEC/K9	3825 Voice Security Bundle, PVDM2-64, Adv IP Serv, 64 MB Flash, 256 MB DRAM
C3825-VSEC-CCME/K9	3825 VSEC Bundle with PVDM2-64, FL-CCME-168, Adv IP Serv, 64 MB Flash, 256 MB DRAM
C3825-VSEC-SRST/K9	3825 VSEC Bundle with PVDM2-64, FL-SRST-168, Adv IP Serv, 64 MB Flash, 256 MB DRAM
C3845-VSEC/K9	3845 Voice Security Bundle, PVDM2-64, Adv IP Serv, 64 MB Flash, 256 MB DRAM
C3845-VSEC-CCME/K9	3845 VSEC Bundle with PVDM2-64, FL-CCME-240, Adv IP Serv, 64 MB Flash, 256 MB DRAM
C3845-VSEC-SRST/K9	3845 VSEC Bundle with PVDM2-64, FL-SRST-240, Adv IP Serv, 64 MB Flash, 256 MB DRAM
C3825-BIAB-24/K9	CISCO3825-AC-IP, 24-port switch, AIM-CUE, PVDM2-64, AISK9
C3845-BIAB-24/K9	CISCO3845-AC-IP, 24-port switch, NM-CUE, PVDM2-64, AISK9
C3845-BIAB-48/K9	CISCO3845-AC-IP, 48-port switch, NM-CUE, PVDM2-64, AISK9
Security Bundles	
CISCO3825-SEC/K9	3825 Security Bundle, Advanced Security, 64 MB Flash, 256 MB DRAM
CISCO3845-SEC/K9	3845 Security Bundle, Advanced Security, 64 MB Flash, 256 MB DRAM
CISCO3825-HSEC/K9	3825 Security Bundle, AIM-VPN/EPII-PLUS, Adv. IP Serv, 64 MB Flash, 256 MB DRAM
CISCO3845-HSEC/K9	3845 Security Bundle, AIM-VPN-HPII-PLUS, Adv. IP Serv, 64 MB Flash, 256 MB DRAM
CISCO-FIPS-KIT=	Tamper Proof for 80/18/28/38/72/73 Routers and ASA

Table 6 gives the Cisco IOS Software feature sets that the Cisco 3825 and the Cisco 3845 support.

Table 6. Cisco IOS Software Feature Sets that Cisco 3825 and Cisco 3845 Support

Cisco IOS Software Feature Sets	Cisco 3825	Cisco 3845
IP Base	S382IPBK9	S384IPBK9
IP Base without encryption	S382IPB	S384IPB
IP VOICE	S382IPVK9	S384IPVK9
IP VOICE without encryption	S382IPV	S384IPV
ENTERPRISE BASE	S382EBK9	S384EBK9
ENTERPRISE BASE without encryption	S382EB	S384EB
ADVANCED SECURITY	S382ASK9	S384ASK9
SP SERVICES	S382SPSK9	S384SPSK9
ENTERPRISE SERVICES	S382ESK9	S384ESK9
ENTERPRISE SERVICES without encryption	S382ES	S384ES
ADVANCED IP SERVICES	S382AISK9	S384AISK9
ADVANCED ENTERPRISE SERVICES	S382AESK9	S384AESK9
INTEGRATED VOICE/VIDEO: GK, IPIP GW, TDMIP GW	S382IVS	S384IVS
INTEGRATED VOICE/VIDEO: GK, IPIP GW, TDMIP GW AES	S382AVSK9	S384AVSK9
ADVANCED ENTERPRISE SERVICES WITH SNA SWITCHING	S382SNAK9	S34SNAK9

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Table 7 lists the IOS feature licenses available for the Cisco 3800 Series.

Table 7. IOS feature licenses for the Cisco 3800 Series

Part Number	Cisco IOS Feature License Description
Call Manager Express and Survivable Remote Site Telephony Feature Licenses	
FL-CCME-144	Cisco CallManager Express Feat License Up To 144 Phones
FL-CCME-168	Cisco CallManager Express Feat License Up To 168 Phones
FL-CCME-192	Cisco CallManager Express Feat License Up To 192 Phones
FL-CCME-240	Cisco CallManager Express Feat License Up To 240 Phones
FL-SRST-168	Feat Lic Survivable Remote Site Telephony Up To 168 Phones
FL-SRST-240	Feat Lic Survivable Remote Site Telephony up to 240 Phones
FL-SRST-336	Feat Lic Survivable Remote Site Telephony Up To 336 Phones
FL-SRST-720	Feat Lic Survivable Remote Site Telephony Up To 720 Phones
Land Mobile Radio Feature License	
FL-LMR	Land Mobile Radio Feature License (2600XM, 2691, 2811, 2821, 2851, 3700, 3800)
Voice XML Feature Licenses	
FL-VXML-1	VoiceXML Feature License For 1 Session
FL-VXML-12	VoiceXML Feature License Up To 12 Sessions
IP Mobility Gateway Feature Licenses	
FL-IPMOBGW-100=	IP Mobility Gateway Feature Set—up to 100 Users
FL-IPMOBGW-500=	IP Mobility Gateway Feature Set—up to 500 Users
FL-IPMOBGW-1000=	IP Mobility Gateway Feature Set—up to 1000 Users

Service and Support

Leading-edge technology deserves leading-edge support. Cisco SMARTnet® technical support for the Cisco 3800 Series is available on a one-time or annual contract basis. Support options range from help-desk assistance to proactive, onsite consultation. All support contracts include:

- Major Cisco IOS Software updates in protocol, security, bandwidth, and feature improvements
- Full access rights to Cisco.com technical libraries for technical assistance, electronic commerce, and product information
- Access to the industry's largest dedicated technical support staff 24 x 7

Cisco offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you protect your network investment, optimize network operations, and prepare the network for new applications to extend network intelligence and the power of your business. For more information about Cisco services, refer to Cisco Technical Support Services or Cisco Advanced Services.

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- **Australia:** 612 9935 4107
- **Other:** 408 526-7209
- **Web:** http://www.cisco.com

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Europe Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: +31 0 800 020 0791
Fax: +31 0 20 357 1100

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